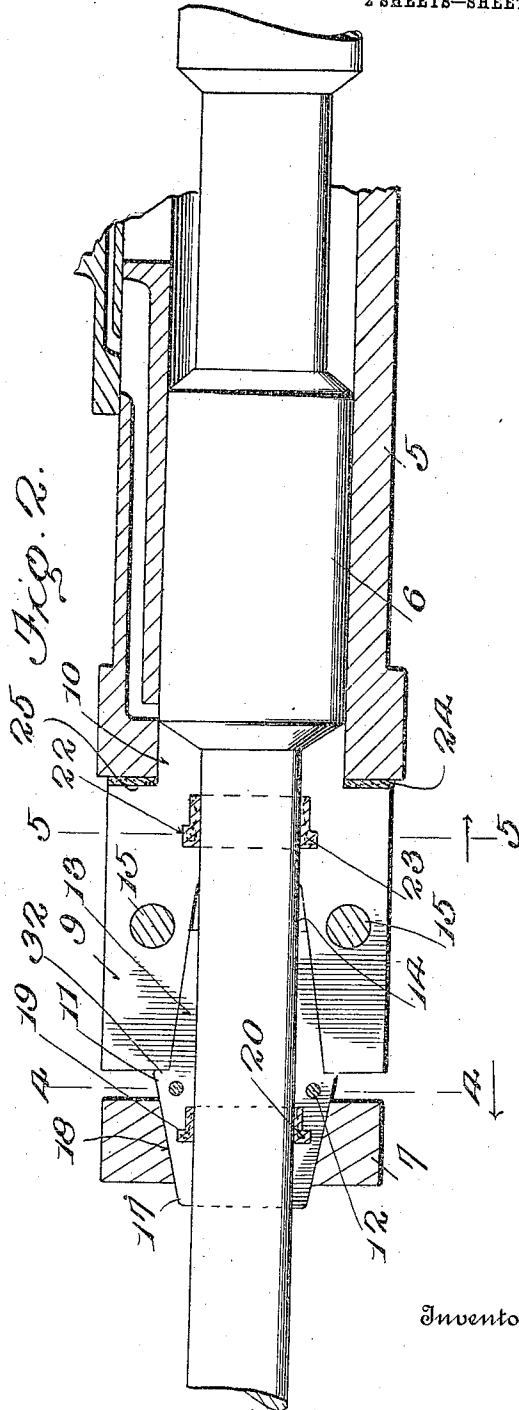
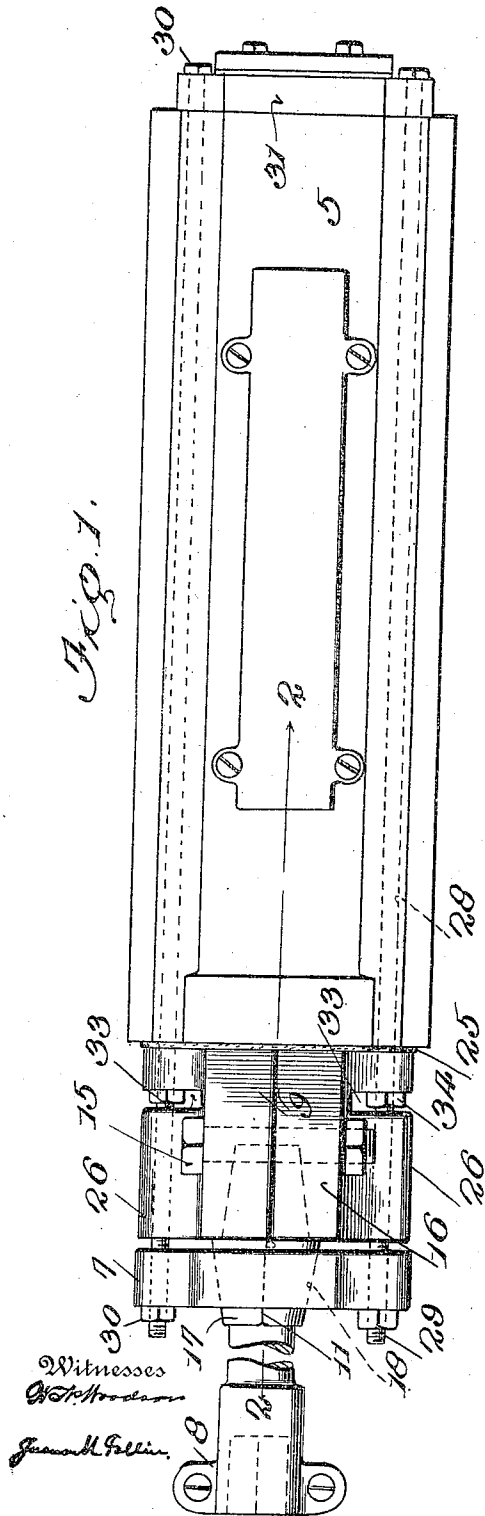


G. KEMMERLING.
 FRONT HEAD FOR DRILLING MACHINES.
 APPLICATION FILED SEPT. 22, 1909.

960,557.

Patented June 7, 1910.

2 SHEETS—SHEET 1.



Inventor

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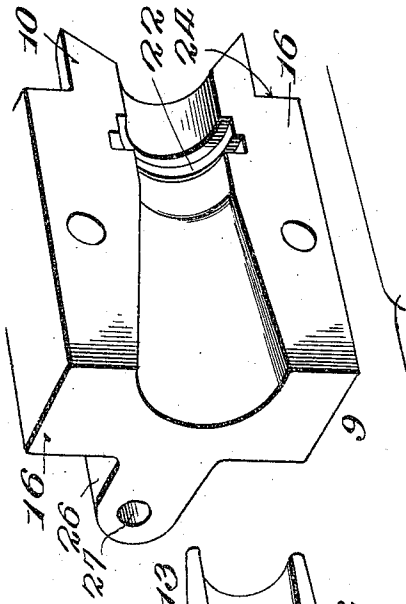


Fig. 3.

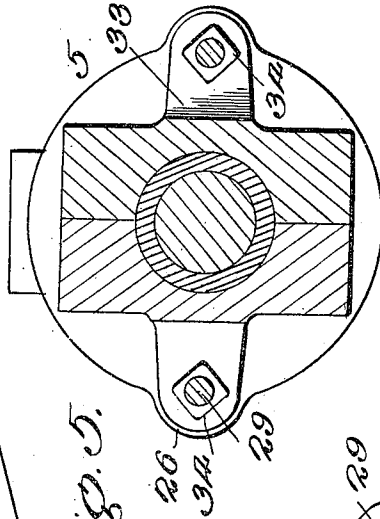
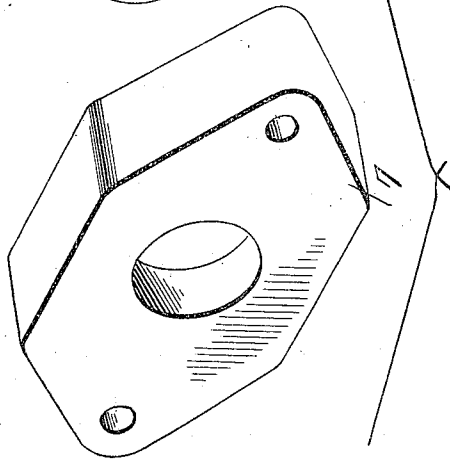
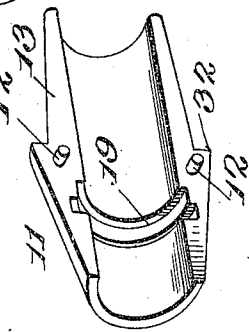


Fig. 5.

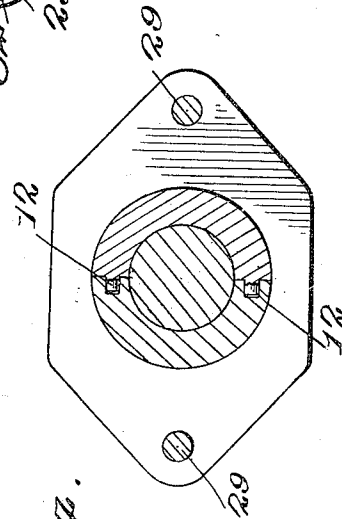


Fig. 6.

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UNITED STATES PATENT OFFICE.

GRANT KEMMERLING, OF DOUGLAS ISLAND, DISTRICT OF ALASKA.

FRONT HEAD FOR DRILLING-MACHINES.

960,557.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed September 22, 1909. Serial No. 518,907.

To all whom it may concern:

Be it known that I, GRANT KEMMERLING, citizen of the United States, residing at Douglas Island, District of Alaska, have invented certain new and useful Improvements in Front Heads for Drilling-Machines, of which the following is a specification.

This invention relates to rock drilling machines and more particularly to a novel form of head for the front end of the piston cylinder.

The object of the invention is to provide a cylinder head, the construction of which is such as to cause the piston to travel in a straight path and thus prevent undue wear on the cylinder.

A further object is to provide a cylinder head including a gland having a portion thereof projecting within the cylinder and provided with spaced packing strips bearing against the piston so as to prevent leakage.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a top plan view of a portion of a rock drilling machine provided with a cylinder head and gland constructed in accordance with my invention; Fig. 2 is a longitudinal sectional view of the same partly in elevation; Fig. 3 is a perspective view of the front cylinder head detached, one of the inner and outer gland sections being shown in perspective at the rear of the cylinder head; Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 2; Fig. 5 is a similar view taken on the line 5—5 of Fig. 2.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In the accompanying drawings, 5 design-

ates the cylinder in which is mounted for reciprocation a piston 6, one end of the latter being projected through the forward head 7 and provided with a suitable chuck 8 for engagement with a drilling tool.

Interposed between the front cylinder head 7 and the adjacent end of the cylinder 5 is a gland including spaced outer sections 9, each having one end thereof reduced to form a terminal collar 10 adapted to project within the cylinder 5.

Seated within the outer gland sections 9, is a bushing 11, the latter being also preferably formed in two sections, one of which is provided with laterally extending pins 12 adapted to engage corresponding sockets formed in the adjacent bushing section. The bushing sections 11 are provided with tapered extensions 13 which project within a correspondingly tapered socket 14 formed in the outer sections 9, the outer sections 9 being clamped in engagement with the bushing sections 11 by means of bolts or similar fastening devices 15 passing through perforated ears 16 formed on said outer gland sections 9, as best shown in Figs. 1 and 2 of the drawings.

The bushing sections 11 are formed at their forward ends with relatively short tapered portions 17 which engage the correspondingly tapered walls of a socket 18 formed in the front cylinder head 7, there being an annular groove 19 formed in the short tapered portions of the bushing sections 11 to permit the insertion of a packing strip 20.

The walls of the longitudinal bore 21 of the outer gland sections 9 are also formed with seating grooves 22 for the reception of a packing 23 similar in construction to the packing 20, there being a packing strip 24 interposed between an annular shoulder 25 on the gland sections 9 and the adjacent ends of the cylinder as shown, thus to effectually prevent leakage of steam, air or other motive fluid during the operation of the drill.

Projecting laterally from the gland sections 9 and preferably disposed at right angles to the perforated ears 16, are longitudinally disposed reinforcing ribs 26 having openings 27 formed therein and which register with corresponding openings 28 formed in the front cylinder head 7 to permit the insertion of clamping rods 29. The clamping rods 29 extend the entire length of the cylinder 5 and are provided

with terminal threads for engagement with suitable clamping nuts 30, one of the clamping nuts of each rod engaging the outer face of the rear cylinder head 31 and the other clamping rod engaging the outer face of the front cylinder head 7, thus to effectually retain the cylinder heads together with the gland, in position on the cylinder.

It will here be noted that by adjusting the clamping nuts 30, the inclined walls 18 of the front cylinder head 7 will frictionally engage the forward tapered portions 17 of the bushing sections 11, thus forcing the tapered extensions 14 of said bushing within the socket of the outer gland sections 9 and at the same time press the shoulders 25 against the packing 23 so as to effectually align the piston and prevent undue wear on the interior walls of the cylinder. It will also be noted that the bushing sections at the juncture of the front and rear of the tapered extensions thereof are formed with shoulders 32 which bear against the adjacent ends of the outer gland sections 9 when the nuts 30 are adjusted on the clamping rods.

Suitable openings 33 are preferably formed in the longitudinal reinforcing ribs 26, said recesses intersecting the openings 27 so as to permit auxiliary clamping nuts 34 to engage the rods 29, thus to assist in retaining the gland and its associated parts in position on the forward end of the cylinder.

If desired the pins 12 on the bushing may be dispensed with, and the clamping rods 29 made shorter and stud bolts fastened in the end of the cylinder head, without departing from the spirit of the invention.

Having thus described the invention, what is claimed as new is:

1. In a rock drilling machine, the combination with a cylinder having a piston rod operating therein, of gland sections projecting within the cylinder and each provided with an interior seating recess and exterior laterally extending perforated ears, a sectional bushing projecting within the gland sections and provided with a tapered portion, a cylinder head engaging the tapered portion of the bushing, fastening devices extending through the perforations in the ears of the gland sections for clamping the latter in engagement with the bushing, a packing seated in the recesses of the gland sections and bearing against the piston rod, and means connecting the head and cylinder for clamping said head in engagement with the tapered portion of the bushing.

2. In a rock drilling machine, the combination with a cylinder having a piston rod operating therein, of a gland having a tapered socket and provided with an in-

terior circumferential recess and exterior longitudinally disposed ribs, a bushing having a tapered rear portion seated in the socket of the gland section and provided with a relatively short front tapered portion, a cylinder head engaging the forward tapered portion of the bushing, a packing seated in the circumferential recess and bearing against the piston rod, and clamping rods engaging the cylinder head and extending through the longitudinal ribs of the gland.

3. In a rock drilling machine, the combination with a cylinder having a piston rod operating therein, of coacting gland sections having reduced portions projecting within the cylinder and provided with an internal tapered socket, a sectional bushing seated within the socket and having one end thereof projected longitudinally beyond the gland sections and provided with tapered exterior walls, a cylinder head having a correspondingly tapered opening engaging the tapered walls of the bushing, means for clamping the gland sections in engagement with the piston rod, and clamping rods extending through said gland sections and engaging the front and rear cylinder heads, there being circumferential recesses formed in the gland and bushing sections to permit the insertion of a packing strip.

4. In a rock drilling machine, the combination with a cylinder having a piston rod operating therein, of coacting gland sections, each having one end thereof reduced to form a shoulder and provided with a reduced extension at said shoulder and projecting within the cylinder, said gland sections being provided with a tapered socket and having laterally extending perforated ears, a sectional bushing having a tapered portion projecting within the socket of the gland sections, one of said bushing sections being provided with spaced pins adapted to enter sockets formed in the mating bushing section, fastening devices extending through the perforations in the ears of the gland sections for clamping the latter in engagement with the bushing sections, a cylinder head engaging the bushing sections, and clamping rods connecting the cylinder heads and extending through the gland sections, there being a shoulder formed on the bushing sections and adapted to bear against the adjacent ends of the gland sections when the clamping rods are adjusted.

In testimony whereof I affix my signature in presence of two witnesses.

GRANT KEMMERLING. [L. S.]

Witnesses:

M. G. ROGERS,

JAS. A. McCANNA.